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EXAMINER	
KAO, JUTAI	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/736,909	SALONIDIS ET AL.	
	Examiner	Art Unit	
	Ju-Tai Kao	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 11/05/2007 have been fully considered but they are not persuasive.

Regarding the arguments raised against prior art reference Kondylis, the applicant indicated that Kondylis fails to teach that the "network is configured to support at least one guaranteed feasible flow allocation", as recited in claim 1.

However, as indicated in the previous office action, the communicating nodes can dynamically adjust the amount of reserved bandwidth based on the current mean source rate (as recited in the paragraph in column 6, lines 59-67). That is, the reserved bandwidth would be the flow allocation, and since the bandwidth is reserved, then it would thus be guaranteed feasible. The dynamic adjustment further ensures that the node could keep as much bandwidth as it could as the network becomes busier.

The applicant further argues that the cited prior arts Cousins and Galand both teach systems using wired LANs as opposed to the claimed wireless ad-hoc network in the current application, and therefore lacks the motivation to combine with Kondylis' invention.

However, Cousins, Galand and Kondylis all deal with methods of sharing bandwidths, and adjusting the bandwidths reserved for the different flows or nodes sharing the link resource. Although Cousins and Galand are more concerned with wired local networks than wireless local networks, it would still be obvious for one of the ordinary skill in the art at the time of the invention to modify a wireless ad-hoc network,

as taught in Kondylis' invention, using features as taught by Cousins and Galand in order to solidify the bandwidth sharing implementation. Furthermore, the wireless network and wired network differs in the transmission medium used. Although the implementation of a wireless network is more complicated due to wireless link interference, the idea of managing available bandwidth resource is still the same.

The applicant also emphasize that Cousins invention deals focuses on a determination of a set of transmission parameters for **a single link** when addressing the rejection on the claimed limitation "bandwidth allocation adjustment of a flow sharing the link. The fact that Cousins' invention focus on a single link reads on the "shared link" of the claim limitation. Furthermore, the cited passage in Cousins indicates the different reservation of bandwidth to be made for different type of data flows, such as "isochronous data and/or other non-LAN uses such as streaming video" as recited in column 7, line 49-52. These different types of data flow all share the same links between the "two machines in LAN 100" (column 7, line 40-41). In addition, even though these optimized parameter are made prior to the connection is set up, they are still considered "adjustments" to be made that are "adaptive to changing conditions" as recited in the abstract. That is, they are not necessarily adjustments to be made for existing data flows; however, they are adjustments to be made to the different flows that will be sharing the links, once the connection is set up. Therefore, Cousins invention does teach the claimed limitations.

Lastly, the applicant argues that Counterman refers to forward error correction in wireless ad hoc networks. However, although the primary concern in Counterman's

invention is focused on the forward error correction, Counterman does in fact teaches that its system allocates bandwidth in order to "satisfy the QoS objectives" as recited in the passage in Column 1, lines 60-67. Therefore, this feature in Counterman's invention reads on the claimed limitation of determining a bandwidth allocation that approaches a Quality of Service guarantee condition, as required by claim 3 of the current invention.

In conclusion, the examiner respectfully traverses all of the arguments made against the previous 35 USC 103 rejections and maintains the original grounds of rejections.

Response to Amendment

The amendment made to claim 3 cures the indefiniteness of the original claim 3. Therefore, the associating 35 USC 112 rejection is withdrawn.

The amendment made to claim 7 still fails claim a statutory invention as it claims a non-physical object. That is, claim 7 claims a computer program, which is non-statutory. It is suggested to modify the claim so that it claims "A computer readable medium encoded with a computer program, which when executed, performs..." That is, a physical computer readable medium is statutory since it is a physical object while a software program is not a physical object and therefore is non-statutory.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 7 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 7 claims a computer program, which is non-statutory. It is suggested to modify the claim so that it claims "A computer readable medium encoded with a computer program, which when executed, performs..." That is, a physical computer readable medium is statutory since it is a physical object while a software program is not a physical object and therefore is non-statutory.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 1-2, and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondylis (US 6,621,805) in view of Cousins (US 6,618,385) and Galand (US 6,628,670).

Kondylis discloses a method and apparatus for adaptive bandwidth reservation in wireless ad-hoc networks including the following features.

Regarding claim 1, a method of allocating bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters...reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Regarding claim 4, initiating a communication between the first node and the second node (explained below in the rejection of claim 1 using Cousins) in a slotted (see "ad-hoc nodes...timeslot reservation" recited in column 6, line 24-25), ad hoc, wireless network (see "wireless ad-hoc network" in the title).

Regarding claim 6, a network device (see "a set of transmitters...reserve bandwidth" recited in column 6, line 16-17) of allocating bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of

transmitters...reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Regarding claim 7, a computer program embodied on computer-readable media (see "computer product" recited in the abstract), with the computer program configured to allocate bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters...reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Regarding claim 8, a network device (see "a set of transmitters...reserve bandwidth" recited in column 6, line 16-17) of allocating bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters...reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Kondylis does not disclose the following features: regarding claim 1, the method comprising the steps of: initiating a communication between the first node and a second node in the network that, together, are endpoints of a link, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; determining, in the first node, a first new bandwidth allocation that approaches a first optimization condition for the flow; communicating with the second node to determine a mutually-agreed upon optimal bandwidth allocation for the flow; notifying neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed; and adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed; regarding claim 2, re-performing the initiating, determining, communicating, notifying, and adopting steps at a later point in time; regarding claim 5, initiating a communication between the first node and the second node in a network on which a Time Division Multiple Access (TDMA) schedule is implemented; regarding claim 6, a first communication unit configured to initiate a communication between the device and a node in the network that, together, are endpoints of a link in the network, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; a first processing unit configured to determine a first new bandwidth allocation that approaches a first optimization condition for the flow, wherein the first processing unit is operably connected to the first communication unit; a second communication unit configured to communicate with the node to determine a mutually-agreed upon optimal bandwidth allocation for the flow, wherein the second communication unit is operably connected to

the first communication unit; a third communication unit configured to notify neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed, wherein the third communication unit is operably connected to the first communication unit; and a second processing unit configured to adopt the mutually-agreed upon optimal allocation for the flow when reallocation is needed, wherein the second processing unit is operably connected to the first communication unit; regarding claim 7, the computer program comprising: a first sub-routine for initiating a communication between the first node and a second node in the network that, together, are endpoints of a link, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; a second sub-routine for determining, in the first node, a first new bandwidth allocation that approaches a first optimization condition for the flow; a third sub-routine for communicating with the second node to determine a mutually-agreed upon optimal bandwidth allocation for the flow; a fourth sub-routine for notifying neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed; and a fifth sub-routine for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed; regarding claim 8, initiation means for initiating a communication between the first node and a second node in the network that, together, are endpoints of a link, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; determination means for determining, in the first node, a first new bandwidth allocation that approaches a first optimization condition for the flow; communication means for communicating with the second node to determine a

mutually-agreed upon optimal bandwidth allocation for the flow; notification means for notifying neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed; and adoption means for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed

Cousins discloses a high performance, high bandwidth, and adaptive local area network communications including the following features.

Regarding claim 1, initiating a communication between (see "two machines...communicate..." recited in column 7, line 40-41) the first node (see "DTE (sender)" recited in column 5, line 8) and a second node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link (DTE being the sender end and DCE being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session ...to determine the best use of the available bandwidth" recited in column 7, line 44-47); determining, in the first node (see "designated DTE...determine the parameters..." recited in column 7, line 15-16) , a first new bandwidth allocation (see "determine...optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth...optimized given the condition and quality of the line connection" recited in column 3, line 57-58); communicating with the second node (see "DTE communicates with...DCE regarding the various measurements...to determine the parameters..." recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see

"determine the best use of the available bandwidth..." recited in column 7, line 46-47; also "negotiation further includes reservation of...bandwidth" recited in column 7, line 49-50); and adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized..." recited in column 3, line 52-53).

Regarding claim 2, re-performing the initiating, determining, communicating, notifying, and adopting steps at a later point in time (see "network initialization process may continue...ongoing calibration...may also be performed whenever there is a changed condition..." recited in column 6, line 19-26; wherein the initialization process includes all processes described above in the rejection made to claim 1, and the notifying step is disclosed in Galand below, where the notifying step could be incorporated into the initialization process described here).

Regarding claim 5, initiating a communication between the first node and the second node in a network (explained above in the rejection made to claim 1) on which a Time Division Multiple Access (TDMA) schedule is implemented (see "TDMA" recited in column 10, line 45-50).

Regarding claim 6, a first communication unit (see "interface adapter 200 of the designated DTE" recited in column 7, line 11) configured to initiate a communication between (see "two machines...communicate..." recited in column 7, line 40-41) the device (see "DTE (sender)" recited in column 5, line 8) and a node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link in the network (DTE being

the sender end and DCE being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session ...to determine the best use of the available bandwidth" recited in column 7, line 44-47; a first processing unit (again, the DTE described above) configured to determine a first new bandwidth allocation (see "determine...optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth...optimized given the condition and quality of the line connection" recited in column 3, line 57-58), wherein the first processing unit is operably connected to the first communication unit (the DTE is connected to the DTE adapter; see Fig. 2 "TO/FROM DTE" connection with the adapter 200); a second communication unit configured (the DTE itself) to communicate with the node (see "DTE communicates with...DCE regarding the various measurements...to determine the parameters..." recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth..." recited in column 7, line 46-47; also "negotiation further includes reservation of...bandwidth" recited in column 7, line 49-50), wherein the second communication unit is operably connected to the first communication unit (the DTE includes both units); and a second processing unit (the DTE itself) configured to adopt the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized..." recited in column 3, line 52-53), wherein the second processing unit is operably connected to the first communication unit (the DTE includes both units).

Regarding claim 7, a first sub-routine for initiating a communication between (see "two machines...communicate..." recited in column 7, line 40-41) the first node (see "DTE (sender)" recited in column 5, line 8) and a second node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link (DTE being the sender end and DCE being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session ...to determine the best use of the available bandwidth" recited in column 7, line 44-47); a second sub-routine for determining, in the first node (see "designated DTE...determine the parameters..." recited in column 7, line 15-16) , a first new bandwidth allocation (see "determine...optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth...optimized given the condition and quality of the line connection" recited in column 3, line 57-58); a third sub-routine for communicating with the second node (see "DTE communicates with...DCE regarding the various measurements...to determine the parameters..." recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth..." recited in column 7, line 46-47; also "negotiation further includes reservation of...bandwidth" recited in column 7, line 49-50); and a fifth sub-routine for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized..." recited in column 3, line 52-53).

Regarding claim 8, initiation means (see "interface adapter 200 of the designated DTE" recited in column 7, line 11) for initiating a communication between (see "two machines...communicate..." recited in column 7, line 40-41) the first node (see "DTE (sender)" recited in column 5, line 8) and a second node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link (DTE being the sender end and DCE being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session ...to determine the best use of the available bandwidth" recited in column 7, line 44-47); determination means (the DTE itself) for determining, in the first node (see "designated DTE...determine the parameters..." recited in column 7, line 15-16), a first new bandwidth allocation (see "determine...optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth...optimized given the condition and quality of the line connection" recited in column 3, line 57-58); communication means (the DTE itself) for communicating with the second node (see "DTE communicates with...DCE regarding the various measurements...to determine the parameters..." recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth..." recited in column 7, line 46-47; also "negotiation further includes reservation of...bandwidth" recited in column 7, line 49-50); and the adoption means for adopting the mutually-agreed upon optimal

allocation for the flow when the reallocation is needed (see "These parameters are then utilized..." recited in column 3, line 52-53).

Galand discloses a method and system for sharing reserved bandwidth between several dependent connections in high-speed packet switching networks including the following features.

Regarding claim 1, notifying neighbor nodes in the network of the mutually agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of call acceptance, the modified link metrics...sent to...each node in the network by means of a broadcast algorithm).

Regarding claim 6, a third communication unit (see "origin (access) node 100" recited in column 10, line 53; which is equivalent to the DTE in Cousins) configured to notify neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of call acceptance, the modified link metrics...sent to...each node in the network by means of a broadcast algorithm), wherein the third communication unit is operably connected to the first communication unit (the origin node/DTE includes both units).

Regarding claim 7, a fourth sub-routine for notifying neighbor nodes in the network of the mutually agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of call acceptance, the modified link metrics...sent to...each node in the network by means of a broadcast algorithm).

Regarding claim 8, notification means for notifying neighbor nodes in the network of the mutually agreed upon optimal bandwidth allocation when reallocation is needed

(see "in case of call acceptance, the modified link metrics...sent to...each node in the network by means of a broadcast algorithm).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Kondylis by using the features, as taught by Cousins and Galand, in order to provide efficient use of bandwidth between two nodes; and in order to provide intermediate nodes with essential information regarding bandwidths to be allocated to the particular link.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondylis (US 6,621,805) in view of Cousins (US 6,618,385) and Galand (US 6,628,670) as applied to claim 1 above, and further in view of Counterman (US 6,724,727).

Kondylis in view of Cousins and Galand discloses the claimed limitations described above. Kondylis in view of Cousins and Galand do no disclose the following features: regarding claim 3, determining, in a first node, a first new bandwidth allocation that approaches at least one of a Max Min Fair condition and a Quality of Service guarantee condition.

Counterman discloses a policy-based forward error correction in packet networks including the following features.

Regarding claim 3, determining, in a first node, a first new bandwidth allocation (explained above in the rejection made to claim 1 using Cousins) that approaches at least one of a Max Min Fair condition and a Quality of Service guarantee condition (see

"allocates bandwidth...in order to satisfy the QoS objectives..." recited in column 1, line 63-65).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Kondylis, Cousins and Galand by using the feature, as taught by Counterman, in order to enhance the service quality to the end users.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ju-Tai Kao whose telephone number is (571)272-9719. The examiner can normally be reached on Monday ~Friday 7:30 AM ~5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571)272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ju-Tai Kao

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER